

REMARKS

The present communication is responsive to the Official Action mailed December 21, 2005. Claims 22-32 have been withdrawn from consideration. Claims 1-21 are currently pending. A petition for a three-month extension of the term for response to said Official Action is transmitted herewith.

Claims 1-10 and 12-21 were rejected under 35 U.S.C. § 103(a) as assertedly being obvious over *Glenn*, U.S. Patent 6,214,644 (*Glenn* '644) in view of *Haba, et al.*, U.S. Patent 6,309,910 (*Haba* '910). Reconsideration is respectfully requested.

As to independent claims 1 and 11, the Official Action (pp. 2-3) asserts that *Glenn* '644 teaches "a method of making mountable MEMS devices comprising assembling a portion of a wafer having a main surface and a multiplicity of spaced-apart caps projecting upwardly from the main surface (fig. 2B, 42) and having channels between the caps (16); a terminal bearing element incorporating an array of terminals (fig. 3, 44); and electrically connecting the terminals by bonding leads extending to contacts on the wafer disposed in the channels (46)." The Action further asserts that the reference teaches "severing the wafer in the channels (fig. 2B, 20; singulation streets) to form a plurality of units, each unit containing a cap, a terminal, and a contact (fig. 3)."

The Action admits that *Glenn* '644 fails to teach using a lead frame disposed on top of the cap as the terminal. However, the Action asserts that it would have been obvious to combine *Glenn* '644 with *Haba* '910 to teach the present invention. According to the Action, *Habba* '910 teaches "a method of making electrical connections in microelectrical devices using breakable lead frame sections, wherein the lead frame terminal is mounted on top of the device (fig. 12; col. 11, lines 17-20); the leads are aligned co-directionally with

the channels between devices (col. 10, lines 48-67); the lead frame is supported by a dielectric layer (fig. 12, 112); the terminals (118, 130) are separated from each other by severing the leads (128) and bending the leads to engage with the contacts in the channels (172)." It is respectfully submitted that this characterization of the reference is in error. Nothing in Haba has been pointed out as properly suggesting anything about "channels between devices." The cited passages in Haba are directed to lead-bonding techniques in which a support structure such as a dielectric sheet having portions 112, 114 separated by gaps 110 (Fig. 12) is disposed over a semiconductor chip and the leads are bonded to the chips within the gaps in the support structure. In this arrangement, the leads are elevated above the chip contacts only by the thickness of the layers 108, 112 constituting the dielectric support structure. (See col. 6, lines 15-31; col. 10, lines 48-67). In the actual reference teaching, the extent of any lead bending shown in Fig. 12 is no more than the thickness of the dielectric layers included in the support structure. There is no teaching in Haba of placing leads above a cap, or of bending the leads downwardly so that leads enter into "channels between devices." The asserted "lead frame" teachings of Haba (col. 11, lns. 18-20) do not alter the teaching of the reference that the support structure bearing the leads should be placed immediately over the contacts on the chip.

Applicant respectfully traverses the assertion in the Official Action that it would have been obvious to one of ordinary skill in the art to use the lead frame system of Haba '910 to electrically connect the MEMS device of Glenn '644. To begin, the Action's statement that "attaching a lead-frame as described by Haba et al. was a conventional method of packing a MEMS device to electrically connect it to peripheral circuitry and allow it [to] perform its intended function" is unsupported

by any teaching which has been pointed out in the references cited in the Action. Applicant disagrees with this statement and requests that, if such an argument is to be relied upon, that a factual basis therefore be provided.

Furthermore, the combination of Glenn '644 and Haba '910 fails to teach the invention of claim 1 because nothing in the combination thereof teaches the mounting of terminals simultaneously on a plurality of caps as recited in claim 1. Glenn '644 teaches attaching a MEMs chip and cap to a substrate 52 and electrically connecting bond pads 13 to traces 44 by bond wires 46. As shown in FIG. 3, trace 44, which the Action asserts is analogous to the terminals of the present invention, is not mounted on cap 46. While Haba '910 teaches the use of flexible leads including a frangible intermediate section, for making electrical connections in microelectronic components, nothing which has been pointed out in Haba '910 would properly suggest teaches mounting the terminals of Glenn on top of the cap 42. The structure resulting from a fair combination of Glenn '644 and Haba '910, following what each reference fairly suggests, would be identical to that which is shown in FIG. 3 of Glenn '644, with the flexible lead of Haba '910 in place of the bond wires 46 used in Glenn '644. Following the teachings of Haba, the support structure or lead frame would be placed immediately over the exposed region of the Glenn chip bearing contacts 16 so as to perform the lead-bonding operation as contemplated by Haba. Terminals 44 would still be located on substrate 52 remote from cap 42. Accordingly, the rejection of independent claim 1 should be withdrawn.

The rejection of dependend claims 2-10 and 12, which depend from claim 1, should be withdrawn for the same reasons. Additionally, the rejection of claim 5 should be withdrawn because neither reference fairly teaches aligning leads with "channels extending co-directionally with said leads" as

recited. This feature is exemplified in Fig. 12 and paragraphs 41-42 of the specification. The assertion in the Official Action that Haba teaches leads aligned "co-directionally" with channels is respectfully traversed as contrary to the reference teaching. Again, Haba does not have "channels between devices as asserted", but merely has gaps 110 in a dielectric support structure. Moreover, the leads 118 extend across the gaps 110; the leads are transverse to the gaps, and are not aligned "co-directionally" with the gaps.

As to claim 10, nothing in either reference has been pointed out as suggesting that terminal-bearing element should have terminals connected to one another which terminals are separated during "said severing step", i.e. the step of severing the wafer, as recited in claim 7. The assertion in the Official Action that Haba severs "terminals (118,130)" from one another fails for two reasons. First, structure 130 is not a terminal. Second, the severing step in Haba is performed during bonding of an individual lead; it does not occur during severing of a wafer.

Claim 11 was rejected under 35 U.S.C. § 103(a) as assertedly being obvious over Glenn '644 in view of Haba '910, and in further view of Kim, U.S. Patent 6,670,206 (Kim '206). Reconsideration is respectfully requested. Claim 11 depends from independent claim 1 which, based on the foregoing, is believed to be allowable. Because nothing in Kim '206 was cited as overcoming the deficiencies of Glenn '644 and Haba '910 as discussed above, the rejection of claim 11 should be withdrawn.

Independent claim 13, along with claims 14-21, dependent thereon, were rejected on Glenn '644 in view of Haba '910. This rejection should be withdrawn for substantially the same reasons as discussed above with respect to claim 1. Here again, the combined references do not fairly suggest mounting a terminal-bearing unit so as to place terminals simultaneously

onto the "upper surface" of the wafer recited in claim 13, which surface is "above" the main surface and above the contacts with are disposed in "depressions".


As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he/she telephone applicant's attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

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Respectfully submitted,

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